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Indian Standard

LEATHER PUMP BUCKETS MADE FROM CHROME TANNED LEATHER – SPECIFICATION

(First Revision)

भारतीय मानक

क्रोम शोधित चमड़े से बनी चमड़े की पम्प बाल्टियां — विशिष्टि

(पहला पुनरीक्षण)

UDC 621.882.4 : 675.72.03

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

June 1990 **Price Group 3**

AMENDMENT NO. 1 AUGUST 1998
TO
IS 1273 : 1989 LEATHER PUMP BUCKETS MADE FROM CHROME TANNED LEATHER — SPECIFICATION
(First Revision)

[*Page* 1, *Table* 1, *Sl No.* (i), *col* (2)] — Substitute 'over and above' *for* 'over'.

(CHD 017)

Reprography Unit, BIS, New Delhi, India

Leather Sectional Committee, CHD 17

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards on 29 December 1989, after the draft finalized by the Leather Sectional Committee had been approved by the Chemical Division Council.

The increasing use of hydraulic appliances involving the use of oil and water pumps has necessitated the use of leather pump buckets to ensure the efficiency of such pumps. Chrome tanned leather pump buckets are processed by currying the chrome tanned hydraulic leather. The leathers are then moulded into shape by dipping into a bath of molten wax and then pressing the hot impregnated leather into the shape and form required.

This standard was originally published in 1958 and is being revised in view of technological developments over a period of time. In this revision a new requirement for performance test has been incorporated along with the method of test. Other modifications that have been brought about in this revision are:

a) Changes in the clause on manufacture of pump buckets, and

b) Incorporation of a requirement on solvent extractable substances for the pump buckets.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

LEATHER PUMP BUCKETS MADE FROM CHROME TANNED LEATHER — SPECIFICATION

(First Revision)

1 SCOPE

1.1 This standard prescribes the requirements of leather pump buckets made from chrome tanned leather for use in water system when temperature is likely to be higher than normal temperature.

2 REFERENCES

2.1 The following Indian Standards are necessary adjuncts to this standard:

IS No.	*Title*
IS 323 : 1959	Specification for rectified spirit (*revised*)
IS 582 : 1970	Methods of chemical testing of leather *(first revision)*
IS 1640 : 1960	Glossary of terms relating to hides, skins and leather
IS 5868 : 1983	Methods of sampling for leather *(first revision)*
IS 5914 : 1970	Methods of physical testing of leather

3 TERMINOLGOY

3.1 For the purpose of this standard the definitions given in IS 1640 : 1960 shall apply.

4 REQUIREMENTS FOR LEATHER

4.1 Raw Material

The leather used in the manufacture of leather pump buckets shall be full chrome tanned thick hides, butt or shoulder of buffalo or cow, free from growth marks, adulterants and other visible defects.

4.2 The leather shall also comply with the requirements prescribed in Table 1.

5 MANUFACTURE

5.1 The leather pump bucket shall be suitably moulded with grain side in or grain side out as required by the purchaser impregnated with suitable waxes of melting point not less than 55°C and subsequently machined to correct shape and dimensions as agreed to between the purchaser and the supplier.

Table 1 Requirements for the Chrome Tanned Leather for Leather Pomp Buckets

(*Clause* 4.2)

Sl No.	Characteristic	Requirement	Reference to		
			Annex	Clause No. of IS 582: 1970	Clause No. of IS 5914: 1970
(1)	(2)	(3)	(4)	(5)	(6)
i)	Total ash, percent by mass (over Cr_2O_3 Content), *Max*	1.2	—	LC : 3	—
ii)	Solvent extractablc substance, percent by mass, *Max*	3.5	—	LC : 4	—
iii)	Chromic oxide (Cr_2O_3) content, percent by mass, *Min*	3.5	—	LC : 10	—
iv)	Shrinkage in boiling water, *Max*	5 percent of original test piece (after 15 minutes)	—	—	LP : 25
v)	Cupping test	Shall not lose shape or show any damage	A	—	—
vi)	Cracking test	Shall not show any sign of cracking	B	—	—
vii)	Water soluble sulphates (as Na_2SO_4), percent by mass, *Max*	0.5	—	LC : 20	—
viii)	Water soluble chlorides (as Nacl), percent by mass, *Max*	0.5	—	LC : 19	—

NOTE — Calculation in respect of Sl No. (i) to (iii) and (viii) shall be done on zero moisture basis. The moisture content shall be determined as prescribed in LC : 1 of IS 582 : 1970.

6 REQUIREMENTS FOR LEATHER PUMP BUCKETS

6.1 The leather pump buckets shall be uniform in substance, free from grit, hard spots and other visible defects.

6.2 The leather pump buckets shall also comply with the requirements prescribed in Table 2.

6.3 Performance Test

The leather pump buckets shall not lose shape or show any damage when tested according to the method prescribed in Annex D.

7 PACKING AND MARKING

7.1 Packing

The leather pump buckets shall be packed as agreed to between the purchaser and the supplier.

7.2 Marking

The packages shall be marked with the indication of the source of manufacture; number of leather pump buckets in the package; and the month and year of manufacture.

8 SAMPLING AND CRITERIA FOR CONFORMITY

8.1 The scale of sampling and criteria for conformity shall be as prescribed in Annex E.

Table 2 Requirements for Leather Pump Buckets

(*Clauses* 6.2 *and* E-1.3.4)

Sl No.	Characteristic	Requirement	Reference to	
			Annex	Clause No. of IS 582 : 1970
(1)	(2)	(3)	(4)	(5)
i)	*p*H of aqueous extract, *Min*	4	—	LC : 18
ii)	Acid value of the extracted fat, *Max*	4	C	—
iii)	Solvent extractable substance, percent by mass, *Min*	10	—	LC : 4

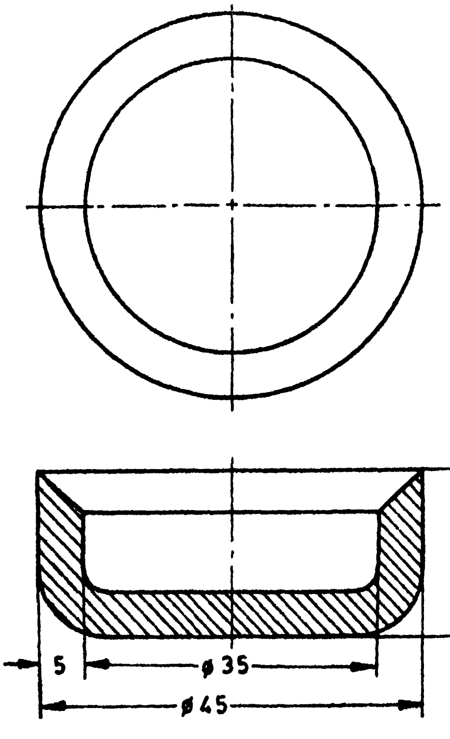
ANNEX A

[*Table* 1, *Item* (v)]

CUPPING TEST

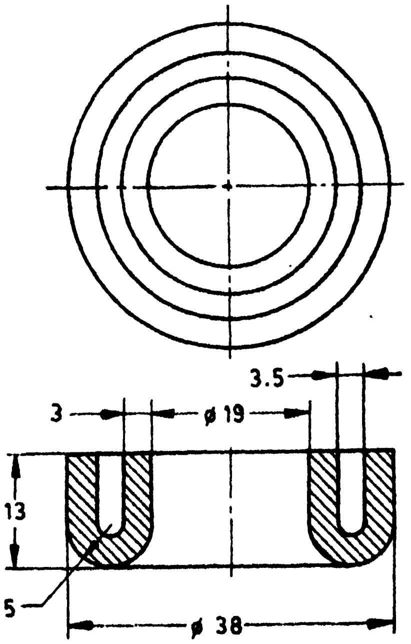
A-1 PROCEDURE

A-1.1 After the addition of suitable percentage of moisture and oil, press the leather sample with the grain-side out, into single and double cups of the shapes and sizes shown in Fig. 1 and Fig. 2, respectively. Remove the resultant cups from the presses and block when completely dry. The cups shall not lose their shape nor shall there be any visible sign of injury to the leather.



All dimensions in millimetres.

FIG. 1 APPARATUS FOR SINGLE CUPPING TEST



All dimensions in millimetres.

FIG. 2 APPARATUS FOR DOUBLE CUPPING TEST

ANNEX B

[*Table* 1, *Item* (vi)]

CRACKING TEST

B-1 PROCEDURE

B-1.1 Condition the sample prior to testing in an atmosphere of 65 ± 2 percent relative humidity and at a temperature 27 ± 2°C for at least a period of 24 hours, until they have reached equilibrium.

B-1.1.1 Fold the test pieces flat, grain-side outwards.

B-1.1.2 Refold the specimen so folded, at right angles to the original fold, through 180°C round a bar of 12.7 mm diameter. The specimen shall withstand the test without showing any sign of cracking.

ANNXE C

[*Table* 2, *Item* (ii)]

DETERMINATION OF ACID VALUE OF THE EXTRACTED FAT

C-1 APPARATUS

C-1.1 Soxhlet Extractor

C-2 REAGENTS

C-2.1 Petroleum Ether, boiling point below 60°C.

C-2.2 Ethyl Alcohol

95 percent (by volume) or rectified spirit (conforming to IS 323 : 1959) boiled and neutralized with sodium hydroxide solution to a faint pink colour, using phenolphthalein indicator.

C-2.3 Standard Sodium Hydroxide Solution, approximately 5 N.

C-2.4 Phenolphthalein Indicator

One percent solution in 95 percent (by volume) ethyl alcohol or rectified spirit (conforming to IS 323 : 1959) neutral to phenolphthalein indicator.

C-3 PROCEDURE

C-3.1 Weigh accurately about 20 g of the prepared sample (*see* **4** of IS 5868 : 1983). Place it in the soxhlet extractor with a weighed flask and pack it loosely in the thimble. Extract with petroleum ether for 4 hours siphoning every ten minutes, until free from oils and fats. Distil off the solvent completely. Dry the residue at 100 ± 2°C in a suitable oven for about 5 hours till constant weight is obtained (*see* Note). Cool the flask and then weigh. Note the mass of fat obtained. Add 20 to 30 ml of hot ethyl alcohol and titrate against standard sodium hydroxide solution using phenolphthalein as indicator until the pink colour persists for 30 seconds.

NOTE — In practice it is not possible to obtain absolute constancy in the weight of fatty residues, owing to volatility and chemical changes.

C-4 CALCULATION

$$\text{Acid value} = \frac{56{\cdot}1 \times V \times N}{M}$$

where

V = volume in ml of standard sodium hydroxide solution,

N = normality of standard sodium hydroxide solution, and

M = mass in g of fat obtained after extraction with petroleum ether.

ANNEX D

(*Clause* 6.3)

PERFORMANCE TEST

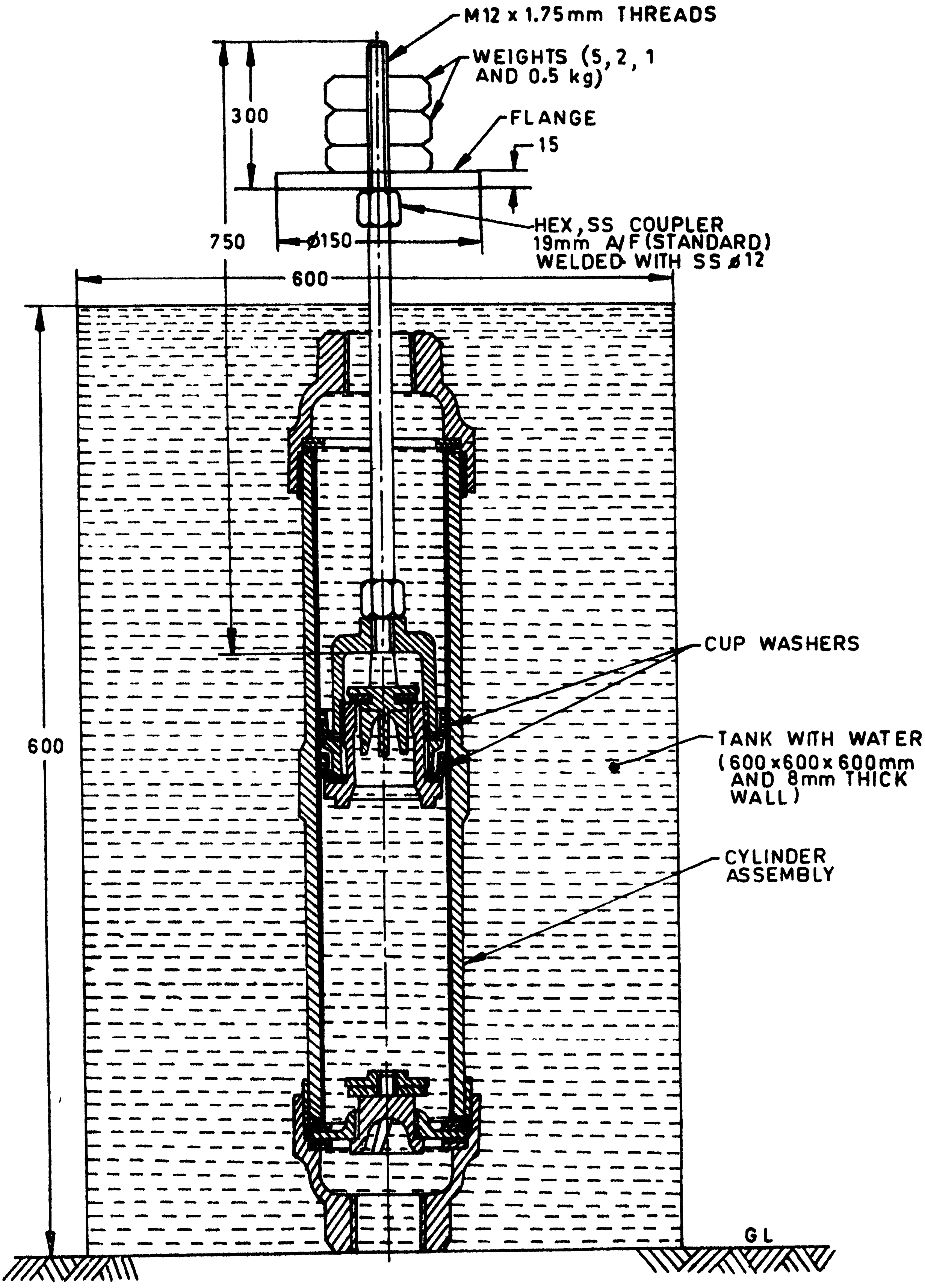
D-1 APPARATUS

D-1.1 A suitable apparatus recommended for performance test is shown in Fig. 3.

D-2 PROCEDURE

D-2.1 Take two pump buckets and fit on the standard cylinder (*see* Fig. 1). Keep the cylinder fitted with pump buckets in a water tank. Lift the plunger assembly every day morning and apply the load (the loads can be 1/2, 1, 2 or 5 kg weights) so that the chain does not clink while doing pumping. These are the loads applied required for the pump buckets movement. Conduct the test till a constant reading is obtained. The load applied shall not exceed 10 kg.

NOTE — Normally after the fourth day the value of the applied load becomes almost constant.


M12 x 1.75mm THREADS
WEIGHTS (5, 2, 1 AND 0.5 kg)
FLANGE
15
300
750
ø150
600
HEX, SS COUPLER 19mm A/F (STANDARD) WELDED WITH SS ø12
CUP WASHERS
TANK WITH WATER (600x600x600mm AND 8mm THICK WALL)
600
CYLINDER ASSEMBLY
GL

All dimensions in millimetres.

FIG. 3 APPARATUS FOR PERFORMANCE TEST

ANNEX E

(*Clause* 8)

SAMPLING OF LEATHER PUMP BUCKETS

E-1 SCALE OF SAMPLING

E-1.1 Lot

All leather pump buckets in a single consignment and drawn from a single batch of manufacture shall constitute a lot. If the consignment is declared to consist of different batches of manufacture, the batches shall be marked separately and the number of leather pump buckets in such batch shall constitute a separate lot.

E-1.2 Gross Sample

Samples shall be tested from each lot for ascertaining conformity of the buckets in the lot to the requirements of the specification. Number of samples to be from a lot shall be in accordance with col 1 and 2 of Table 3. These samples shall be drawn at random from the buckets in the lot.

E-1.3 Criterion of Acceptance

Table 3 Minimum Number of Leather Pump Buckets to be Selected for Sampling from Various Sizes of Lots

(*Clause* E-1.2)

Lot Size (1)	Number of Samples (2)	Rejection No. (3)
25 or less	5	1
26 to 1000	15	2
101 to 300	30	3
301 to 500	40	4
501 to 800	55	4
801 to 1300	75	5
1301 and above	115	7

E-1.3.1 *Visual Tactile and Dimensional Characteristics*

All the samples drawn under **E-1.2** shall be tested for visual, dimensional and tactile characteristics in the first instance. If the number of buckets failing to satisfy the requirements for these characteristics is less than the number given in col 3 of Table 3, the lot shall be declared to have satisfied the requirements for these characteristics. If however, the number of buckets not satisfying the requirements is equal to or greater than the number given in col 3 of Table 3, the lot shall be rejected as not conforming to the requirements for these characteristics.

E-1.3.2 *Chemical and Performance Test*

The lot satisfying the requirements of visual, dimensional and tactile characteristics as given in **E-1.3.1** shall be further subjected to chemical analysis and performance test.

E-1.3.3 The samples for chemical and performance test shall be drawn from the samples already drawn (*see* **E-1.2**) in the ratio of one for every twenty samples or part thereof. These secondary samples for chemical test shall be chosen at random and a composite sample prepared for analysis (*see* **4** of IS 5868 : 1983).

E-1.3.4 The lot shall be considered to have satisfied the requirements of chemical properties and performance test, if the test result of the specimen taken from the prepared sample or the average of the test results of the specimens taken from the prepared sample satisfy the requirements given in Table 2 (*see* **6.2** and **6.3**).

E-1.3.5 A lot shall be accepted as conforming to the specification if it satisfies the requirements of visual, dimensional, tactile, and chemical properties and performance test.

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